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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/501,774      | 07/20/2004  | Yasuhiro Sakurai     | 042593              | 4439             |

38834 7590 03/14/2006

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EXAMINER

GOODLEY, JAMES E

ART UNIT PAPER NUMBER

2817

DATE MAILED: 03/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/501,774 | <b>Applicant(s)</b><br>SAKURAI, YASUHIRO |  |
|                              | <b>Examiner</b><br>James E. Goodley  | <b>Art Unit</b><br>2817                  |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 February 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-12 and 14-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-12 and 14-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Election by Original Presentation***

Newly submitted claims 21-29 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Claims 1-14 were originally presented as claiming an apparatus. Newly added claims 21-29 are presented as claiming a method of manufacturing the apparatus.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 21-29 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 5 and 9-12 are rejected under 35 U.S.C. 102(b) as being anticipated by *Cole et al (of record)*.

Regarding **claim 1**, lines 22-67 of column 3, lines 1-19 of column 4, lines 24-39 of column 8 and Fig. 1 of Cole shows a temperature compensated oscillator, comprising:

an oscillation circuit [10] whose oscillation frequency varies with a temperature change;

an output line [OUTPUT] for outputting a signal based on an oscillation output of said oscillation circuit;

a temperature detection circuit [16] for detecting a temperature state near said oscillation circuit; and

a temperature compensation circuit [14] for keeping a frequency of the signal outputted to said output line substantially constant based on an output from said temperature detection circuit,

wherein a selection circuit [24] is provided which selects whether to enable or disable a temperature compensation function [whether to switch in or out capacitors in array 22 - lines 24-39 of column 8] of said temperature compensation circuit.

Regarding **claims 3 and 5**, lines 8-23 of column 8, Figs. 1 and 7 of Cole shows the temperature compensated oscillator of claim 1, wherein said oscillation circuit has an oscillation capacitor [72], and wherein said selection means has means [data lines 76] for allowing said temperature compensation circuit to vary a capacitance value (by switching in and out capacitors 72) of said oscillation capacitor depending on a temperature detected by said temperature detection circuit when enabling the temperature compensation function of said temperature compensation circuit

(depending upon detected temperature and corresponding correction coefficient voltages from the look-up table), and fixing the capacitance value of said oscillation capacitor to a predetermined capacitance value [effective capacitance in oscillator circuit 12] when disabling the temperature compensation function.

Regarding **claims 9-10**, Fig. 1 of Cole shows the temperature compensated oscillation of claim 1, further comprising:

a selection information storage circuit [20] which stores control information [correction voltage coefficients in look-up table] for controlling a selection state [capacitance switching] of said selection means; and

a compensation data storage circuit [20] which stores temperature compensation data [correction voltage coefficients in look-up table] of said temperature compensation circuit,

wherein said selection information storage circuit and said compensation data storage circuit form an integrated storage circuit [20].

Regarding **claims 11-12**, Fig. 1 of Cole shows the temperature compensated oscillation of claim 1, further comprising:

an external control information input terminal ["DATA" input to 24] provided on a package (as per lines 44-47 of column 2) for inputting from outside control information for controlling capacitance switching of said selection means.

Claims 1, 3, 14-18 and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by *Oka et al. (US 6,882,835)*.

Regarding **claims 1, 3 14 and 16**, lines 36-67 of column 6, lines 7-67 of column 11 and Figs. 1 and 11 of Oka shows a temperature compensated oscillator, comprising:

an oscillation circuit [20] whose oscillation frequency varies with a temperature change;

an output line [OUT] for outputting a signal based on an oscillation output of said oscillation circuit;

a temperature detection circuit [temperature detectors 31 and 41 of compensation circuits 30 and 40 respectively as shown in Figs. 5 and 6] for detecting a temperature state near said oscillation circuit; and

a temperature compensation circuit [30,40] for keeping a frequency of the signal outputted to said output line substantially constant based on an output from said temperature detection circuit,

wherein a selection circuit [comprising switches SW1-SW4, control circuit 80 and memory 90] where said switches are provided to enable or disable temperature compensation functions 30 and 40 in order to vary a capacitance [capacitance of varactor 24 via altering control voltage to the varactor] of an oscillation capacitor depending on a temperature detected by said temperature detection circuit when enabling the temperature compensation function (for example when in 'TCXO mode' as per lines 41-48 of column 11) and for fixing said oscillation capacitor to a predetermined capacitance value [corresponding to constant initial deviation correction voltage V4] when disabling said temperature compensation function (as per lines 61-67 of column 11 – 'SPXO mode').

Regarding **claim 15**, lines 41-48 of column 11 of Oka disclose 'TCXO mode' in which the control voltage to fix varactor 24 to a predetermined capacitance is inhibited from inputting to the varactor when enabling temperature compensation functions 30 and 40.

Regarding **claims 17, 18 and 20**, lines 7-67 of column 11 and Fig. 11 of Oka disclose memory circuit 90, wherein the memory circuit outputs a plurality of bits [to switches SW1-SW4] in order to enable or disable the temperature compensation functions and in which the memory stores temperature compensation data to output to the temperature compensation circuit.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cole in view of ***Gillig et al (of record)***.

Regarding **claim 2**, Cole shows the temperature compensated oscillator according to claim 1 except, "further comprising:

a variable frequency division circuit between said oscillation circuit and said output line,

wherein said selection means has means for allowing said temperature compensation circuit to vary a frequency division ratio of said variable frequency division circuit depending on a temperature detected by said temperature detection circuit when enabling the temperature compensation function of said temperature compensation circuit, and fixing the frequency division ratio of said variable frequency division circuit to a predetermined value when disabling the temperature compensation function.”

However, Fig. 4 and the abstract of Gillig shows a temperature compensated oscillator which has a frequency varying with temperature comprising: a temperature detection circuit [72] driving a temperature compensation controller [70] to vary a frequency division ratio [ $\pm J - 48$ ] of a variable frequency division circuit depending on a temperature detected by said temperature detection circuit when enabling the temperature compensation function of said temperature compensation circuit (when temperature varies enough to require altering the division ratio according to temperature compensation values stored in memory 74), and fixing the frequency division ratio of said variable frequency division circuit to a predetermined value when disabling the temperature compensation function (when temperature is very close to room conditions and hence needs no compensation).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Cole by the device of Gillig by controlling the phase-locked loop dividing ratios via the programming interface of Cole for the



purpose of being able to control both capacitance switching and divider control, therefore have greater temperature compensation ability.

Claims 4, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cole in view of **Wojewoda et al (of record)**.

Regarding **claim 4 and 6-7**, Fig. 1 of Cole shows the temperature compensated oscillator of claim 3 except, "wherein said oscillation capacitor includes a variable capacitor which varies in capacitive value in accordance with a voltage applied thereto, and said temperature compensation circuit has means for changing the voltage applied to the variable capacitor to change the capacitance value of said oscillation capacitor".

However, lines 63-67 of column 3, lines 1-25 of column 4 and Fig. 2 of Wojewoda show temperature detection [34] and compensation circuits [30] which apply a correction voltage to varactors 68 to vary capacitance of the oscillator circuit and to switch in and out said varactors via an external signal [64].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Cole by the device of Wojewoda by including a voltage variable capacitance instead of switching in and out an array of discrete capacitors for the purpose of obtaining a more finely tuned temperature compensation circuit.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Oka**

Regarding **claim 19**, the device of Oka shows the temperature compensated oscillator circuit of claim 17 and suggests but does not specifically disclose, "wherein said selection information storage circuit is composed of a conductive pattern and

enables the temperature compensation function of said temperature compensation circuit caused by the conductive pattern being switched off.

However, it is inherent that the memory circuit of Oka has an array of storage cells of a predetermined conductive pattern. It is also well-known to include one or more fuses or like devices which can cut-out based on a threshold voltage or other environmental condition (such as temperature) and will therefore alter which memory address is being accessed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Oka by including a predetermined conductive pattern which stores information for controlling a selection state when said conductive pattern is switched off for the purpose of accessing desired stored information when a fault condition, such as a detected voltage above some threshold, has occurred.

### ***Response to Arguments***

Applicant's arguments filed 2/1/2005 have been fully considered but they are not persuasive.

Regarding claim 1, it is still asserted that Cole (of record) does indeed disclose all limitations of claim 1, including, "wherein a selection means is provided which selects whether to enable or disable a temperature compensation function of said temperature compensation circuit." Whether or not the program interface of Cole is used during a calibration process or not is irrelevant to the fact that Cole discloses these limitations:

whether to switch in or out capacitors in array 22 (enabling or disabling a temperature compensation function) - lines 24-39 of column 8.

Regarding claim 7, it is still asserted that the device of Cole in view of Wojewoda (of record) does in fact disclose all limitations of claim 7, including, "a means for separating the variable capacitor so that the variable capacitor is not included in said oscillator capacitor when fixing the capacitance value of said oscillation capacitor to the predetermined capacitance value." Lines 14-18 of column 4 in Wojewoda specifically disclose, "switching in appropriate parallel increments of capacitance" ("such as varactors 68") in warp switching bank 66. Compensation circuit 60 sends a control voltage to these varactors to continuously vary capacitance of the switched in varactors.

The rejection of claim 13 under 35 USC 112 has been removed, as claim 13 has been cancelled.

As necessitated by the addition of claims 14-20 new rejections are made for these claims in view of *Oka et al. (US 6,882,835)*.

Claims 21-29 are withdrawn from consideration due to election by original presentation.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

***Fujii et al. (US 6,577,203)*** discloses a method and circuit for temperature compensation of voltage-controlled oscillators and enabling and disabling said temperature compensation function via switching means in conjunction with memory.


#### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James E. Goodley whose telephone number is 571-272-8598. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert J. Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JG



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